being less than a time to capture a single image of the one or more images and for each of the one or more images, determine a first property of a first portion of the image and a second property of a second portion of the image, and identify a characteristic of the emissive species based, at least in part, on the first property and the second property; or

b) globally expose and/or read data from the electromagnetic radiation sensor to provide a plurality of time-encoded signals and identify a characteristic of the emissive species based on a comparison of two or more of the plurality of time-encoded signals.

2. A system as in claim **1**, wherein the source of electromagnetic radiation is configured to emit radiation to excite a steady-state emission in a second emissive species.

3. A system as in claim **1**, wherein a second source of electromagnetic radiation is configured to emit radiation to excite a steady-state emission in a second emissive species.

4. A system as in claim **1**, wherein the second emissive species is the same as the emissive species.

5. A system as in claim **1**, wherein the second portion of the image corresponds to the steady-state emission of the emissive species.

6. A system as in claim **1**, wherein the radiation source is configured to generate electromagnetic radiation for exciting a second emissive species such that the second emissive species produces a second detectable non-steady-state emission during a second emission time period, the second emission time period being at least 10 nanoseconds.

7. A system as in claim **1**, wherein the sensor is configured to detect, during a first portion of the second emission time period, a first emission from the second emissive species, and to detect, during a second portion of the second emission time period, a second emission from the second emissive species.

8. A system as in claim **1**, wherein each emissive species comprises the same emitter.

9. A system as in claim **1**, wherein each emissive species comprises a plurality of emitters.

10. The system of claim **1**, wherein the electromagnetic radiation sensor is configured to capture a plurality of images, and wherein the processing circuitry is further configured to:

determine an average of the first property over the plurality of images;

determine an average of the second property over the plurality of images; and

identify a characteristic of the emissive species based, at least in part, on the average of the first property and the average of the second property.

11. A system as in **10** wherein a delayed emission can be detected in the same image with normal reflected/scattered light.

12. A system as in **10**, wherein excitation is performed by pulsed light and/or frequency modulated light intensity.

13. The system of claim **1**, wherein the electromagnetic radiation sensor is configured to capture a plurality of images, and wherein the controller is further configured to control the radiation source to generate a pulse or intensity modulated at different frequencies of electromagnetic radiation prior to capture of each of the plurality of images.

14. The system of claim **1**, wherein the plurality of photodetectors are arranged in an array of rows and columns, and wherein the processing circuitry is further configured to:

sequentially read out rows or columns of the array to provide a plurality of time-encoded signals; and

generate the one or more images based on the plurality of time-encoded signals.

15. A system as in claim **1**, wherein the plurality of photodetectors are contained within a single integrated electronic chip.

16. A system as in claim **1**, wherein the plurality of photodetectors are contained in multiple integrated electronic chips.

17. A system as in claim **1**, further comprising a source of colorimetric signals.

18. A system as in claim **17**, wherein the colorimetric signal is associated with including images of the assay cartridge, markers that may be used for alignment, text, numbers, pictures, logos, bar codes, and/or QR codes

19. A system, comprising:

an excitation component configured to excite an emissive species such that the emissive species produces a detectable non-steady-state emission during an emission time period of the emissive species;

an image sensor configured to detect at least a portion of the detectable non-steady-state emission; and

an electronic hardware component configured to produce a single image comprising a first portion corresponding to a first portion of the emission time period and a second portion corresponding to a second portion of the emission time period.

20. A system as in claim **19**, wherein the emission time period is at least 10 nanoseconds.

21-44. (canceled)

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